A comparison of the Key Performance Indicators of the RTRS & SSAP

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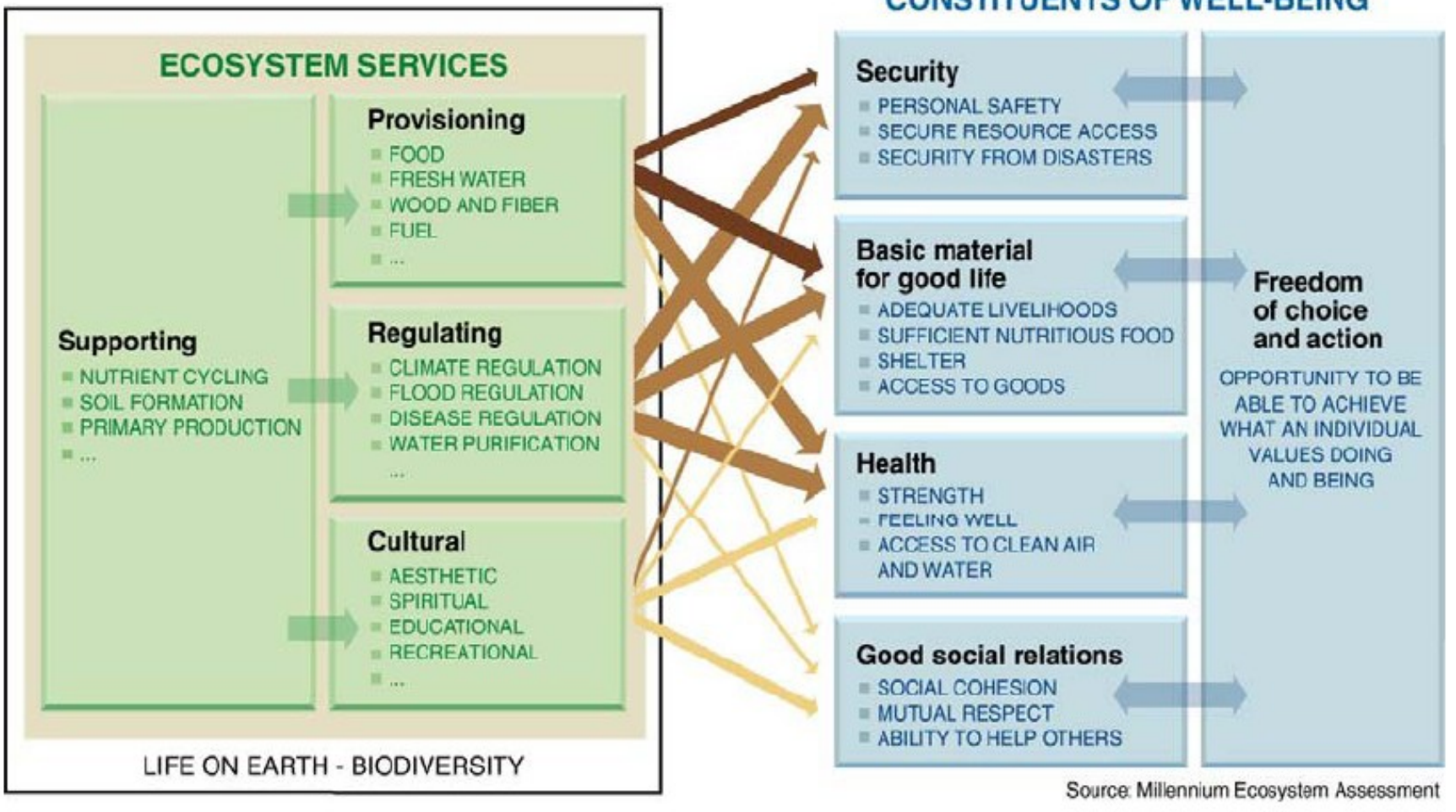
Everything is Connected



Source: Millennium Ecosystem Assessment

ARROW'S COLOR
Potential for mediation by socioeconomic factors

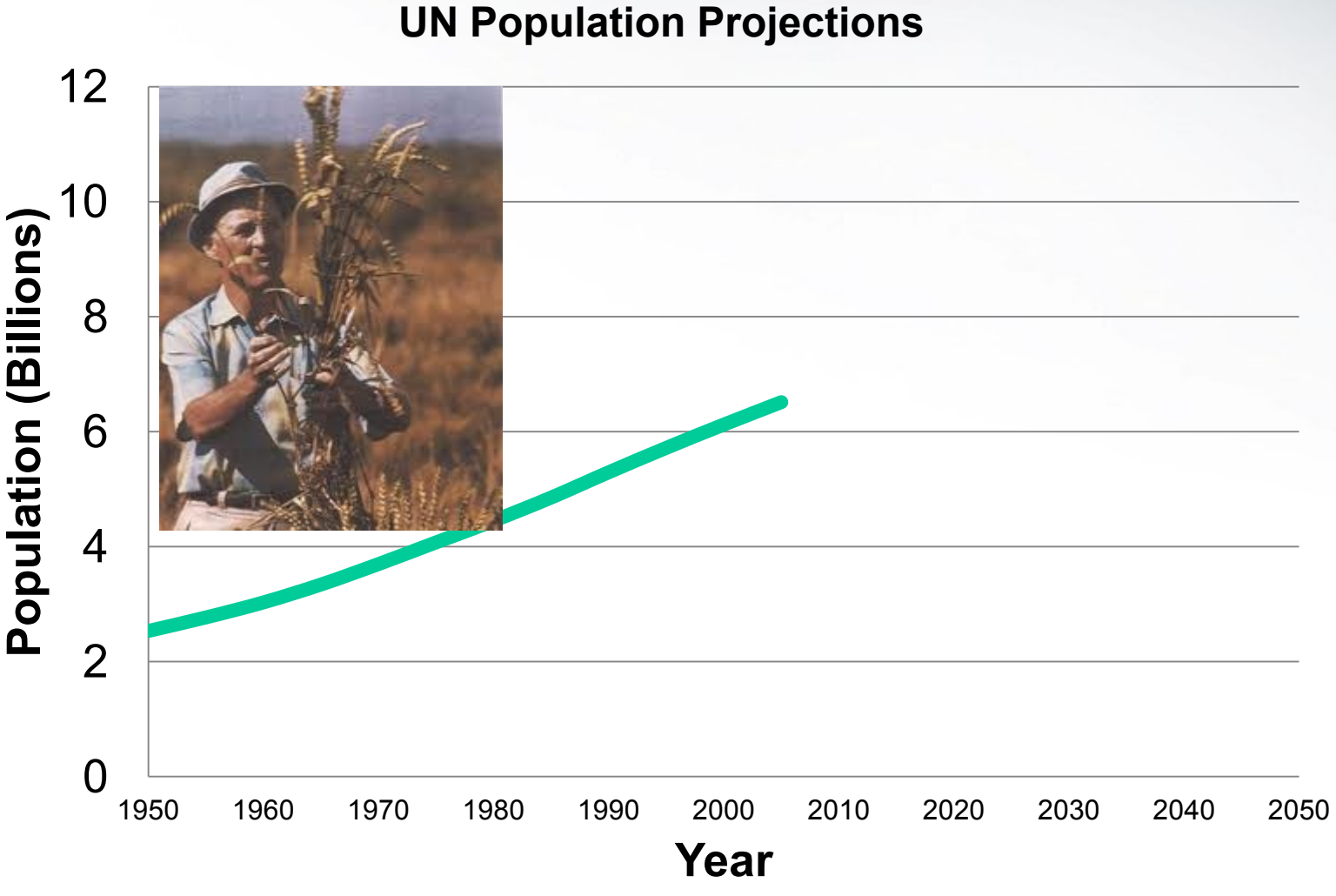
- Low
- Medium
- High

ARROW'S WIDTH
Intensity of linkages between ecosystem services and human well-being

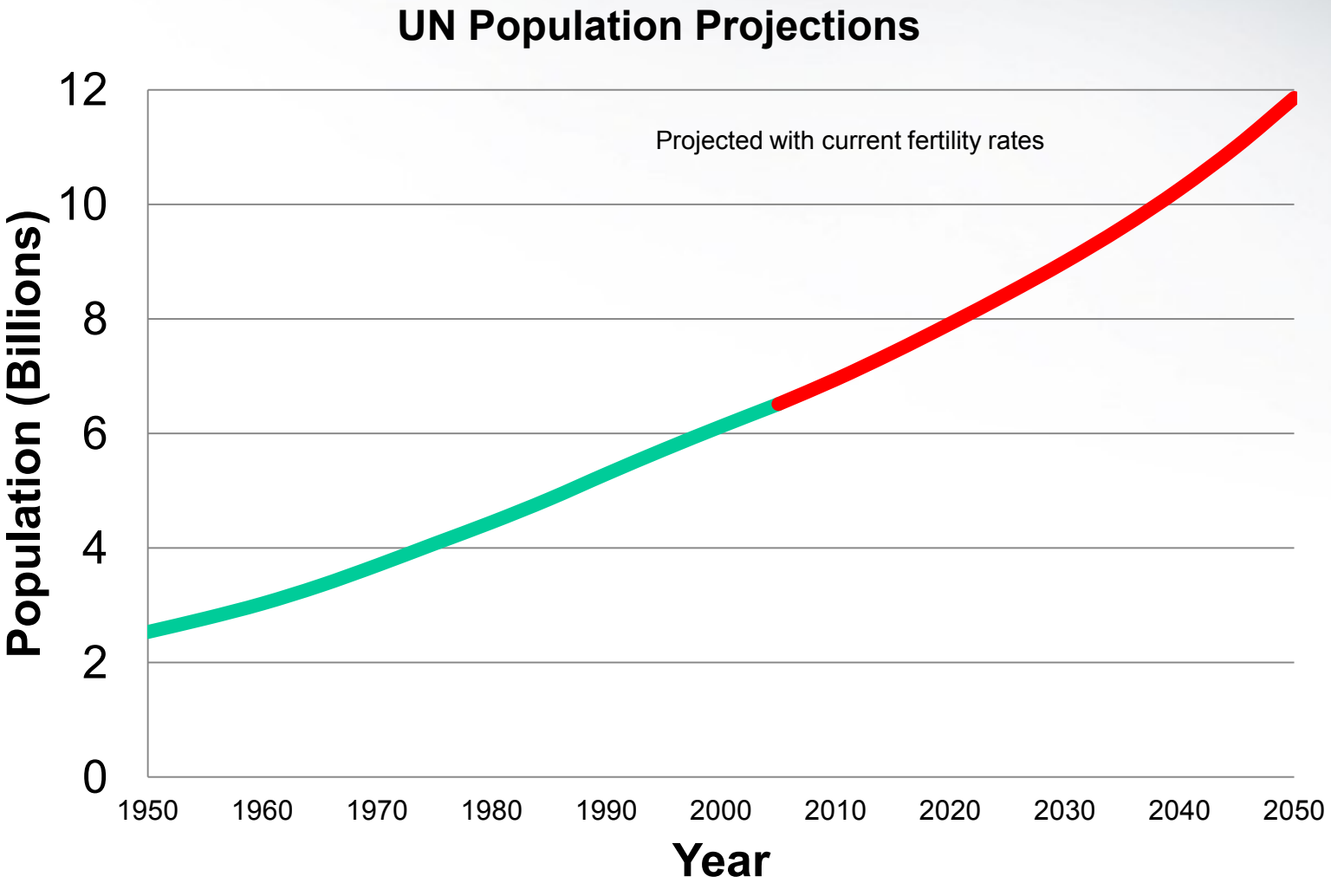
- Weak
- Medium
- Strong

Everything is changing

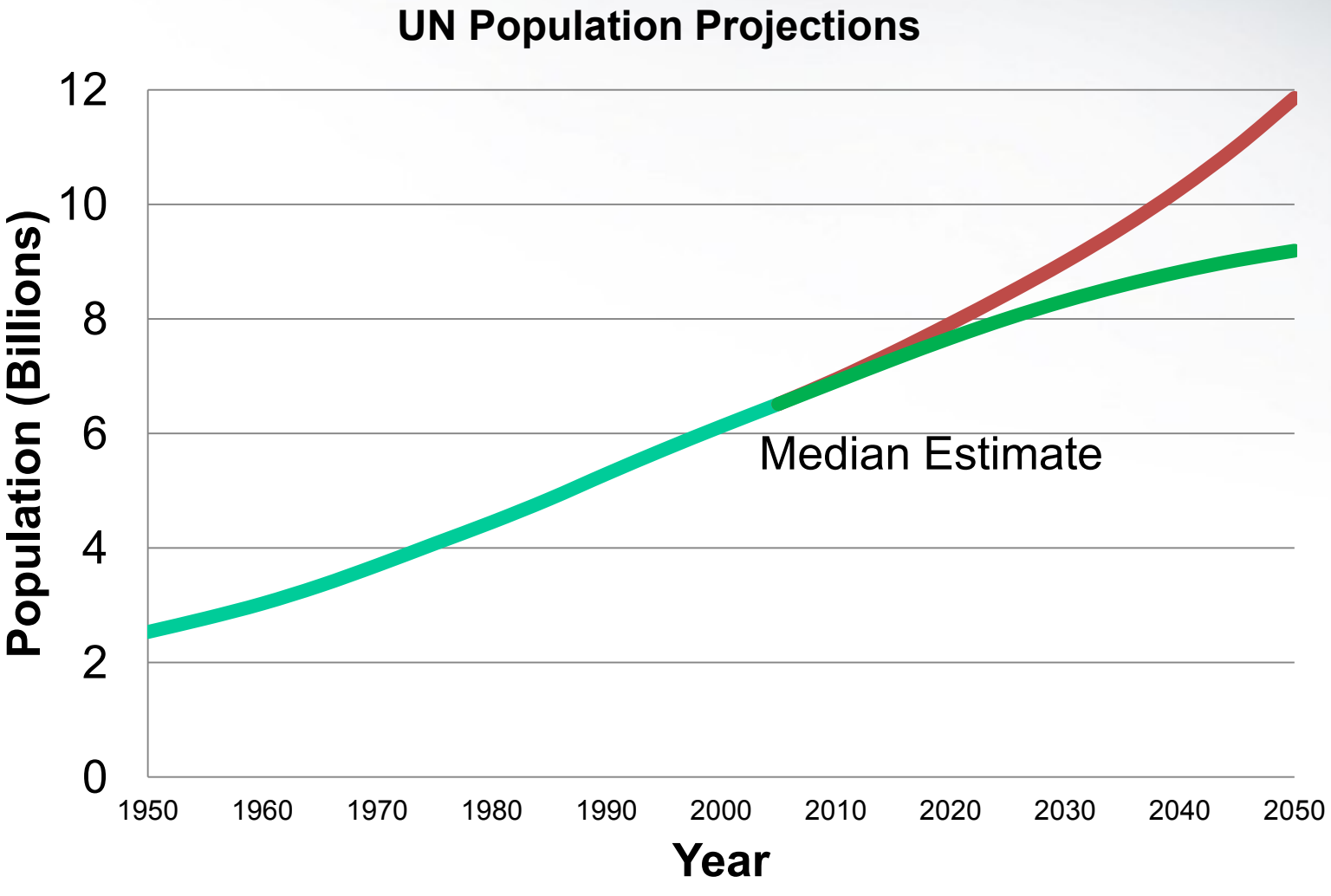
Sustainability 2050: The Challenge



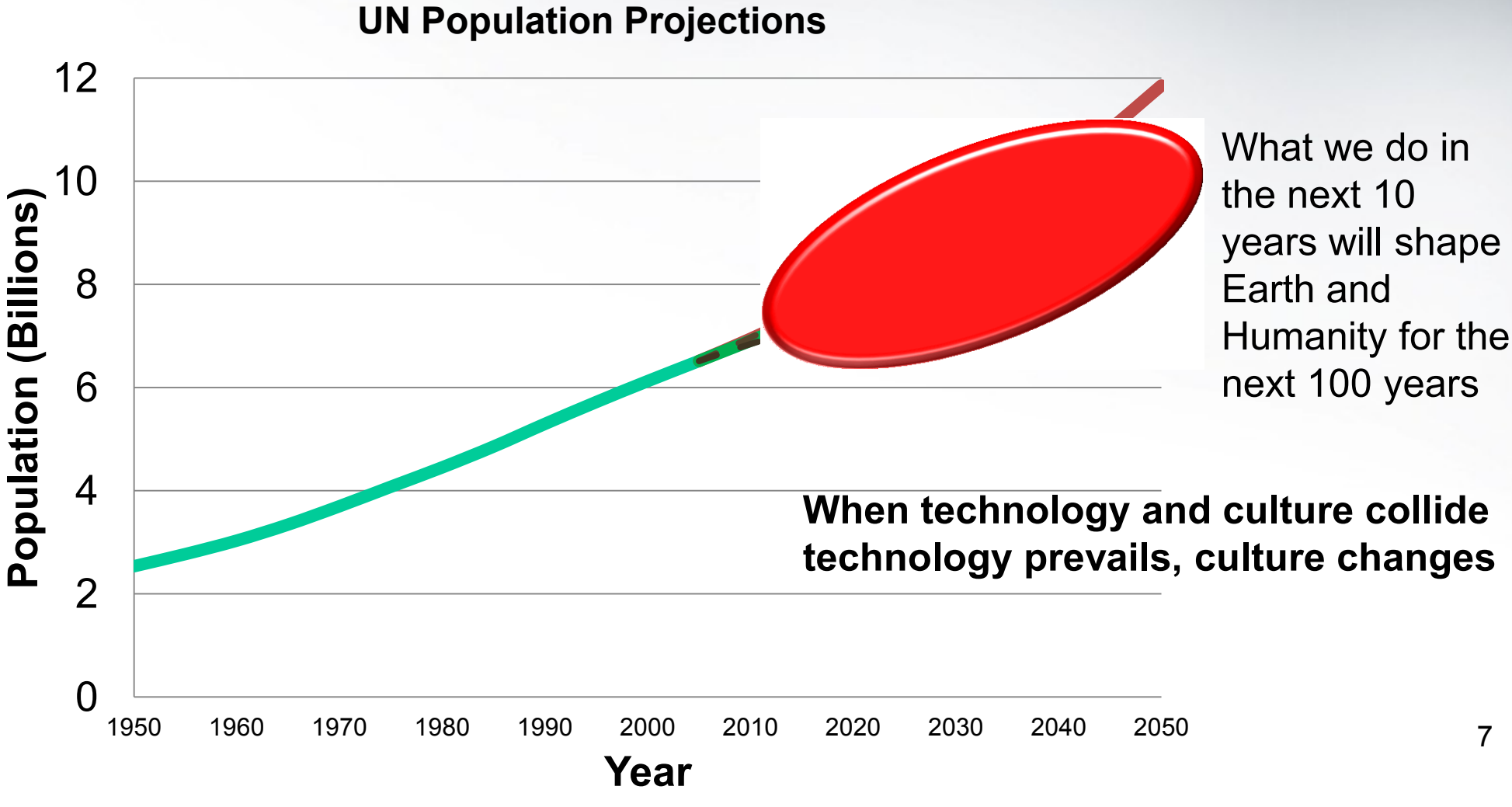
Sustainability 2050: The Challenge



Sustainability 2050: The Challenge



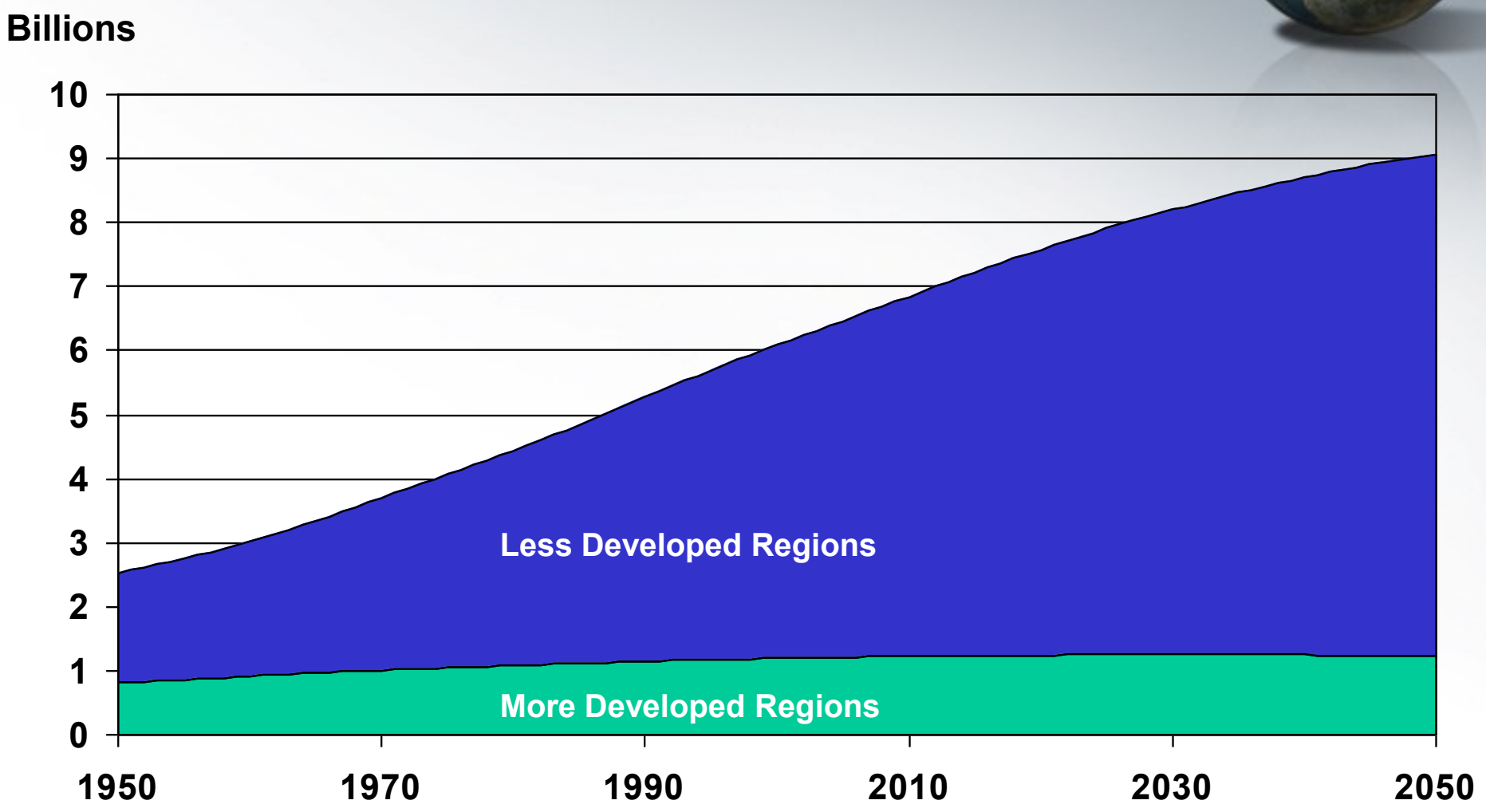
Sustainability 2050: The Challenge



What we do in the next 10 years will shape Earth and Humanity for the next 100 years

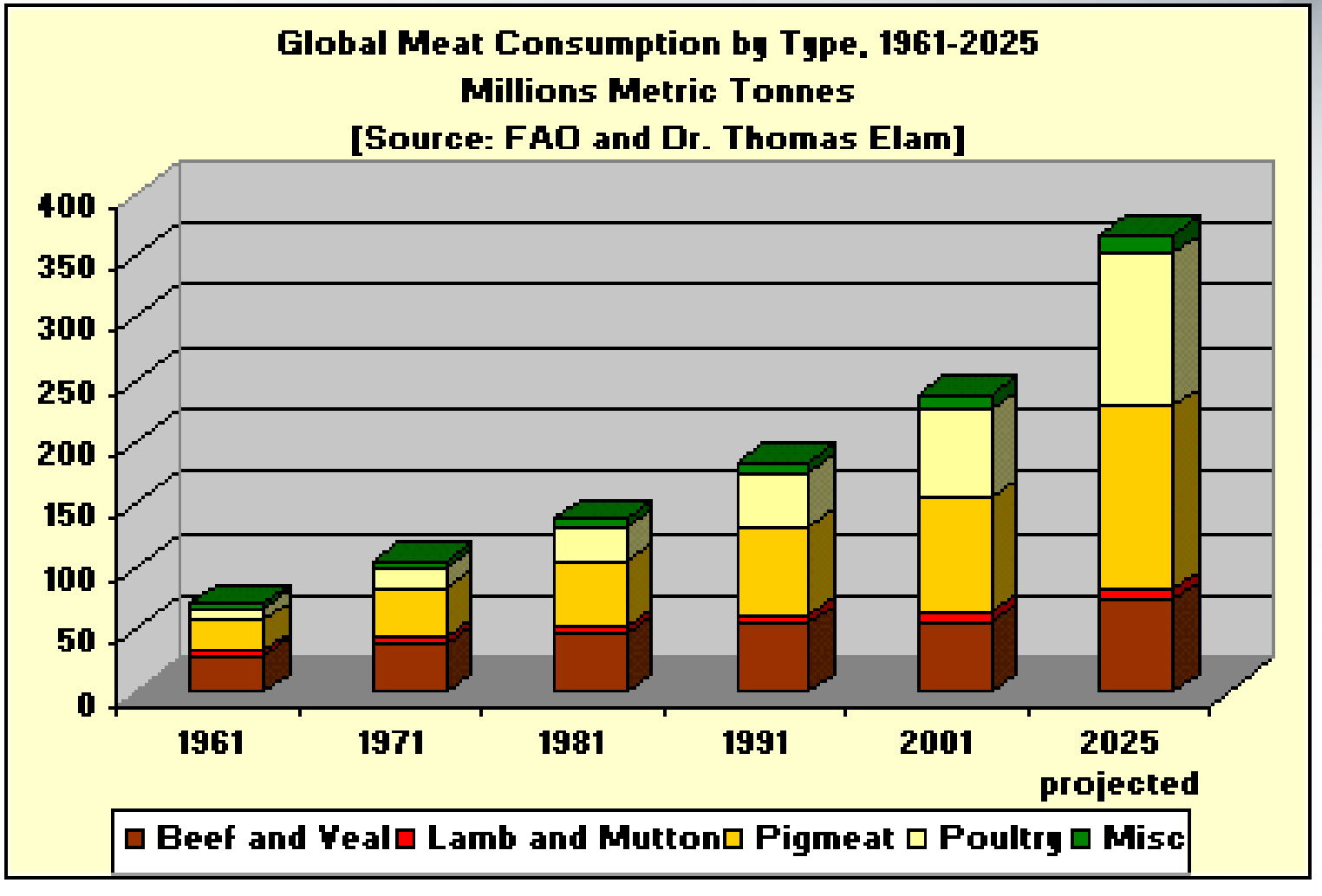
When technology and culture collide technology prevails, culture changes

We are all in this together



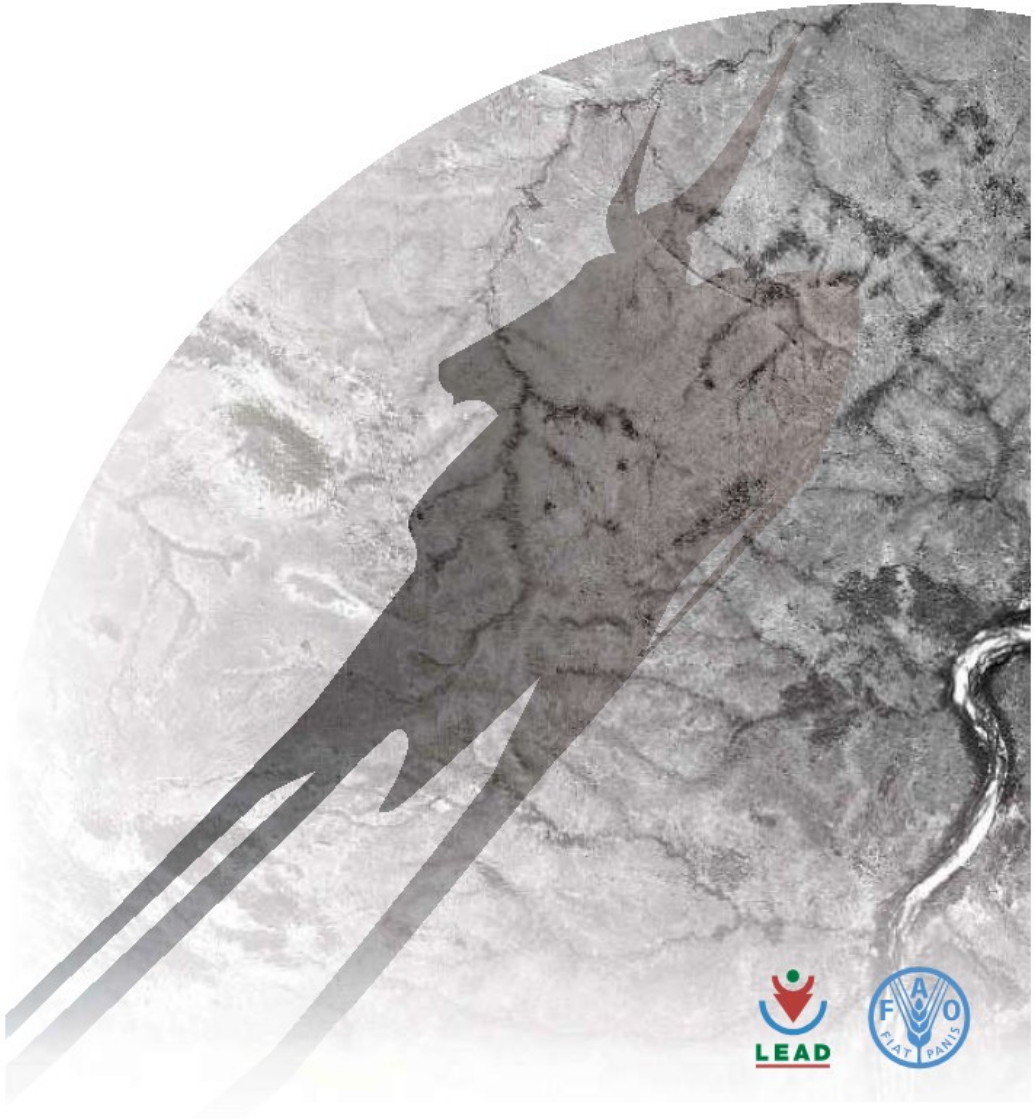
Source: United Nations, *World Population Prospects: The 2004 Revision* (medium scenario), 2005.

Meat Consumption on the Rise



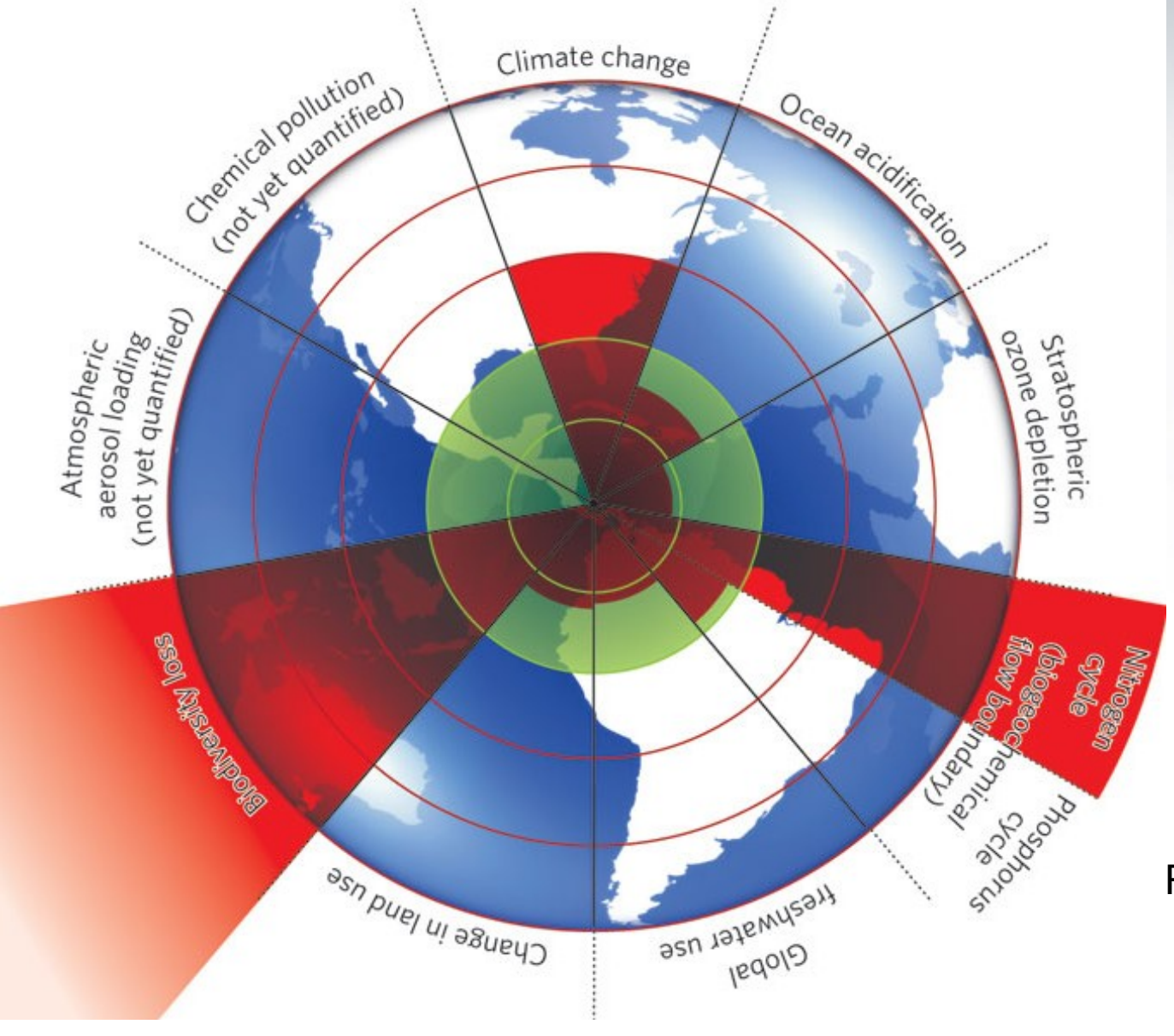
livestock's long shadow

environmental issues and options



- Grazing and pasture lands account for the 70% of land used in agricultural production (30% of land on Earth).
- Livestock accounts for 8 % of total human water use, largely from irrigation of crops.
- Livestock account for an estimated 18 percent of human-caused greenhouse gas emissions.

Sustainability is Multi-metric



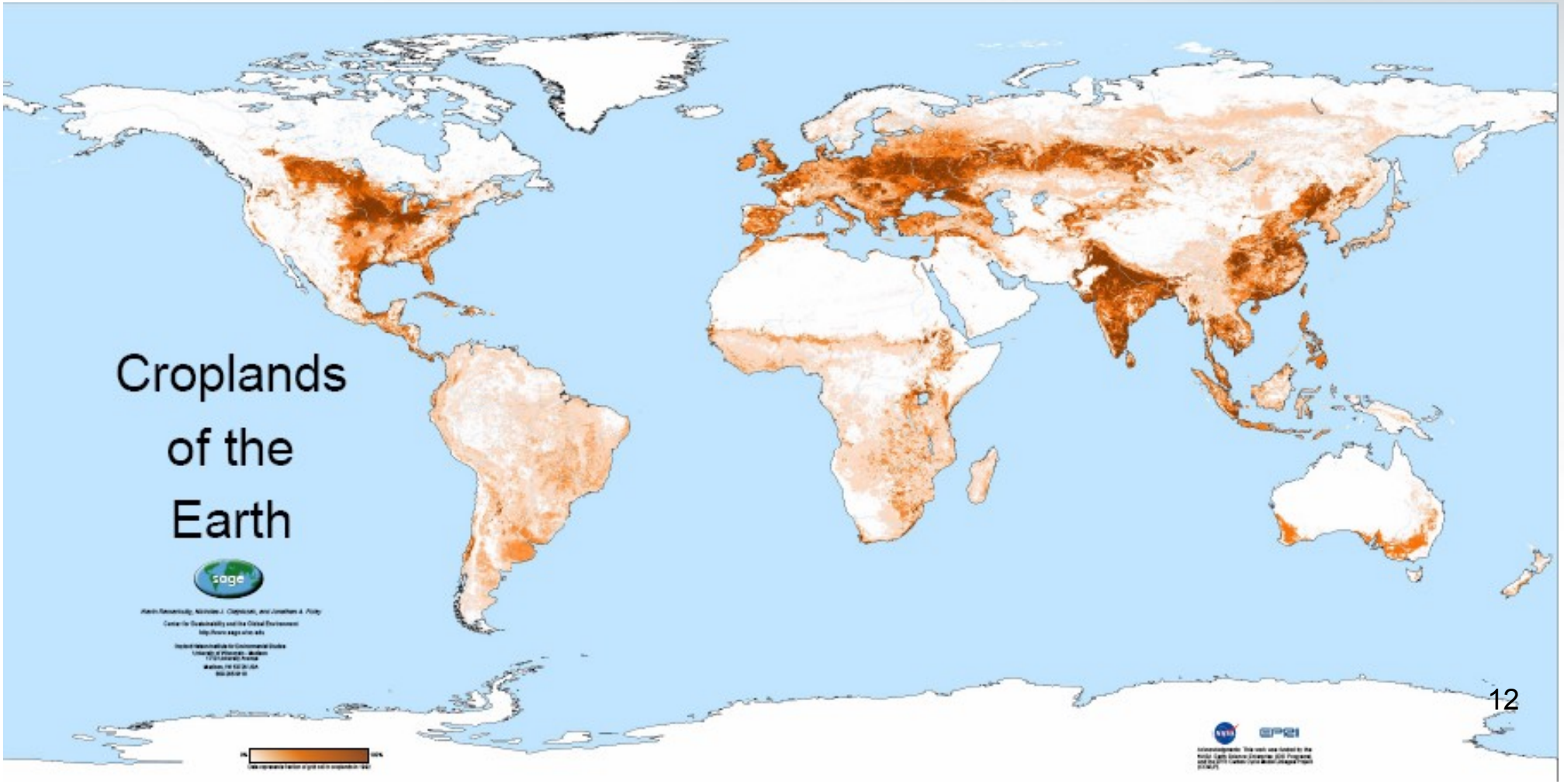
Measure What Matters

1. **Biodiversity**
2. **Nitrogen loss**
3. **Climate Change**
4. **Water**

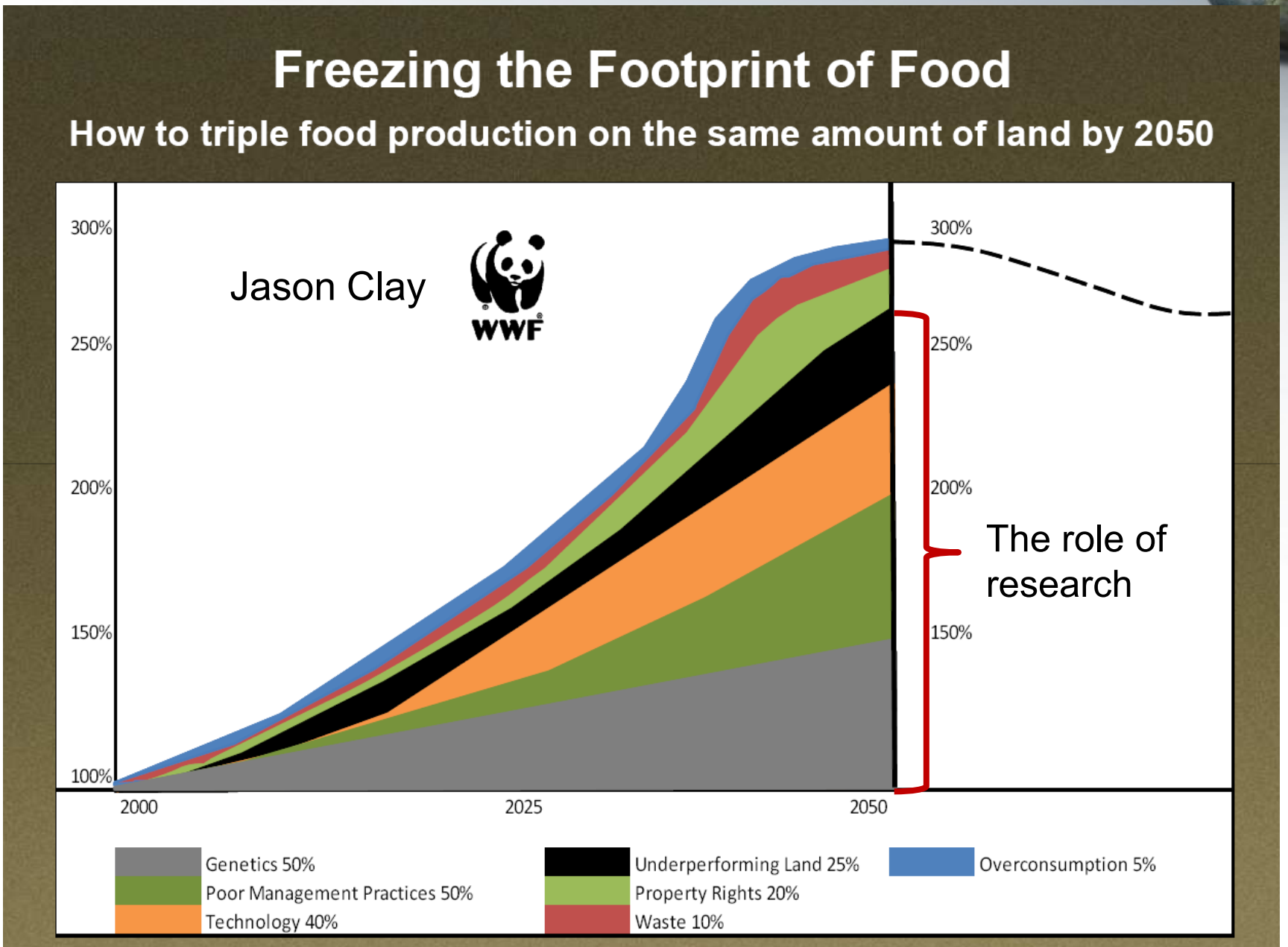
Rockström et al., *Nature* 2009

Human Activities Dominate Earth

Croplands and pastures are the largest terrestrial biome, occupying over 40% of Earth's land surface



Meeting Food Needs by 2050 without stripping Earth's biodiversity



Water and People

Today:

1 B lack access to clean water

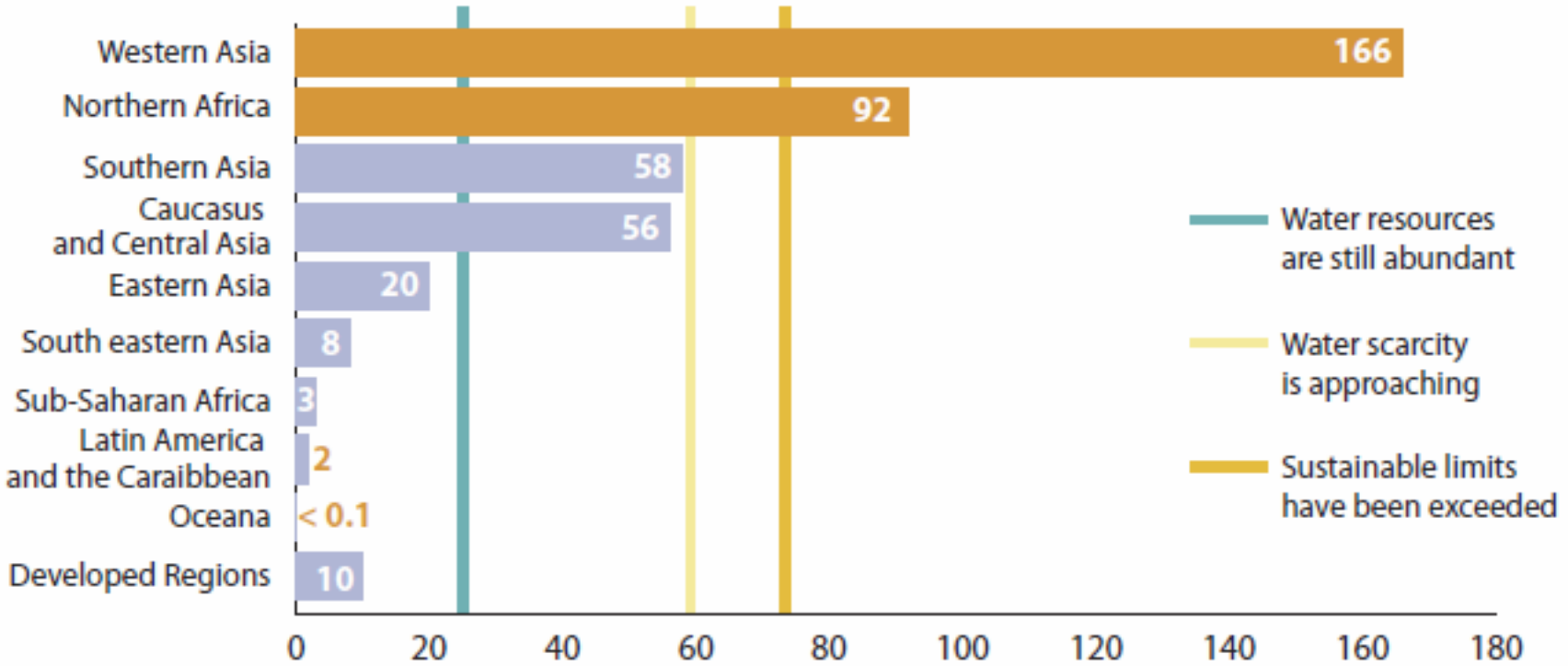
2.4 B lack access to basic sanitation

By 2050:

2 B will suffer water scarcity

25% will have chronic water shortages

Water Scarcity is Increasing



Source: UN (2011a, p. 52).

Surface water and groundwater withdrawal as a percentage of internal renewable water resources, taking into consideration official treaties between countries, around 2005

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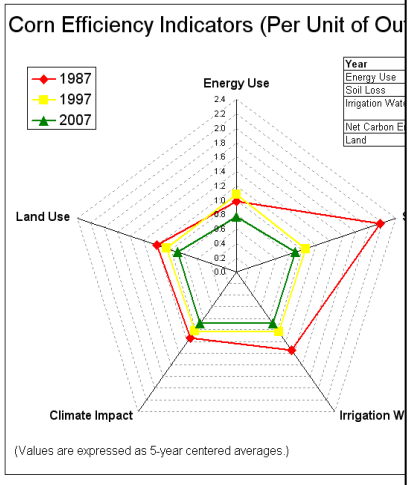
Sustainability Initiatives

Field to M

Keystone Alliance for Sustainab



Sustainability Assessment of Food and Agriculture Systems (SAFA)

Natural Resources Management and Environment Department
Food and Agriculture Organization of the United Nations
January 2012

SUSTAINABILITY CONSORTIUM

Walmart

MASSMART
Dedicated to Value

Definition of Sustainable Agriculture

Meeting the needs of the present while enhancing the ability of future generations to meet their needs

- Increasing productivity to meet future food demands
- Decreasing impacts on the environment
- Improving human health
- Improving the social and economic well-being of agricultural communities

"Feeding 10 billion people without one hectare more of land, one liter more fuel, or one drop more water"

Sustainability Index Framework

1. Define Key Performance Indicators (KPI)
2. Define critical impact metrics for each KPI
3. Benchmark performance for each metric
4. Develop and adopt goals for improvement across each metric
5. Implement improvement strategies
6. Measure each metric using best scientific methods at prescribed frequencies
7. Report results
8. Adjust and adapt practices as necessary

Building Trust Through Key Performance Indicators of Sustainable Agriculture

Key Performance Indicators (KPIs) are things we measure to inform decisions.

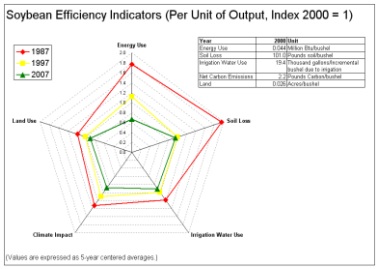
KPIs should be:

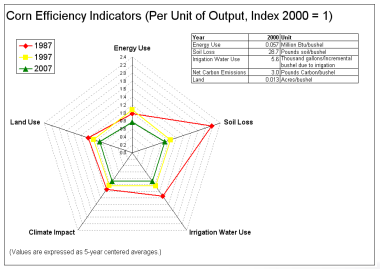
1. Outcomes Based.
2. Science Driven.
3. Technology Neutral.
4. Transparent.

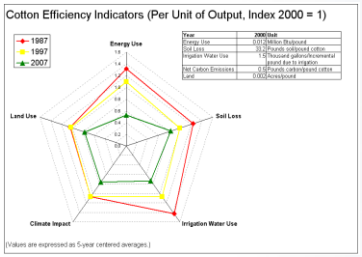
Key Environmental Performance Indicators for Animal Agriculture

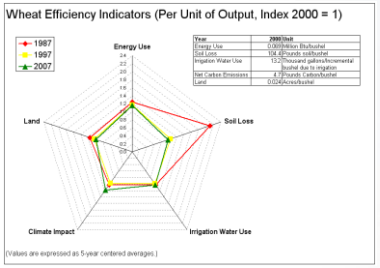
- Greenhouse Gas Emissions
- Energy Use
- Water Use
- Land Use
- Water Quality
- Nutrient Use Efficiency
- Habitat/Biodiversity

Metrics → Bench marks → Goals → Adopt → Assess → Adapt



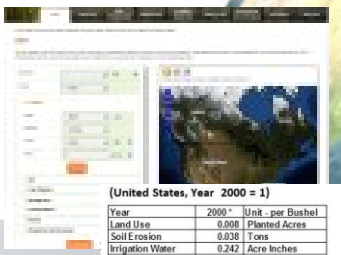


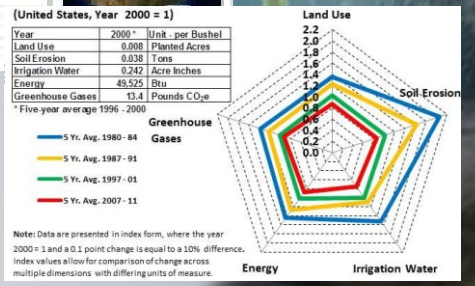




Improve Efficiency Reduce Impacts

Sustainability Metric Calculator





Other Sustainability Initiatives and Programs

NRCS Conservation Planning Assistance

Certification of Sustainable Agriculture Process by Crop Sector

Producers Participate

Process and Products are certified

CPGMs use products, meet threshold criteria for content

CPGMs could make claims, use labeling

Comparative Assessment of the RTRS and SSAP Methods

RTRS: Roundtable on Responsible Soy Standard

SSAP: U.S. Soybean Sustainability Assurance Protocol

Prepared for the U.S. Soybean Export Council
Prepared by Marty Matlock, PhD, PE, BCEE
Executive Director, UA Office for Sustainability
Professor of Ecological Engineering
Biological and Agricultural Engineering Department,
University of Arkansas, Fayetteville, AR

Abbreviated RTRS Principle	SSAP
1 Legal Compliance and Good Business Practice	
1.1 Compliance with local & national legislation	Meets all (2)
1.2 Legal Use Rights to land are defined	Meets all (1)
1.3 Continual Improvement	Substantially meets 2 of 3
2 Responsible Labor Conditions	
2.1 No child labor, forced labor, discrimination or harassment	Meets 7 of 8
2.2 Workers are informed & trained	Meets all (3)
2.3 A safe & healthy workplace is provided for workers	Meets all (7)
2.4 Workers have freedom of association & the right to collective bargaining	Meets 1 of 4
2.5 Workers are paid the national & sector agreement wages or more	Meets 5, Substantially meets 1, does not meet 3
3 Responsible Community Relations	
3.1 Channels are available for communication with local community	Substantially meets all (3)
3.2 Conflicting land uses are avoided or resolved	Meets 1 of 2
3.3 Resolution mechanism is available to traditional land users and local communities	Meets 2, Substantially meets 1
3.4 Local population has fair opportunities for employment and provision of goods & services	Does not meet any (3)

Abbreviated RTRS Principle	SSAP
4 Environmental Responsibility	
4.1 Social & environmental impacts of high risk new infrastructure have been assessed, negative impacts minimized &mitigated	Meets all (4)
4.2 Pollution is minimized & waste managed responsibly	Meets 3, partially meets 1, does not meet 1
4.3 Efforts are made to reduce emissions & increase sequestration of Greenhouse Gases	Meets 1, Substantially meets 3
4.4 Expansion of soy cultivation is responsible	Meets all (2)
4.5 On-farm biodiversity is maintained through preservation of native vegetation	Meets 1, Substantially meets 2
5 Good Agriculture Practice	
5.1 Quality & supply of surface & ground water is maintained or improved	Meets 2, Substantially meets 2
5.2 Maintain or re-establish natural vegetation around springs and water natural watercourses	Meets 2, Substantially meets 1
5.3 Soil quality is maintained or improved & erosion avoided through good management practices	Meets 1, Substantially meets 2

Abbreviated RTRS Principle	SSAP
5.4 Negative environmental & health impacts of phytosanitary products are reduced through Integrated Crop Management (ICM) techniques	Meets 1, Substantially meets 3
5.5 Application of agrochemicals is documented & handling, storage, collection & disposal of chemical waste & containers is monitored	Meets 4, Substantially meets 1
5.6 Agrochemicals listed in Stockholm & Rotterdam Conventions are not used.	Meets all (1)
5.7 Use of biological control agents is documented, monitored, and controlled in accordance with national laws and accepted scientific protocols	Meets 1, Substantially meets 1
5.8 The spread of invasive introduced species and new pests is monitored, controlled, and minimized	Meets all (2)
5.9 Measures are taken to prevent drift of agrochemicals to neighboring areas	Meets 1, Partially meets 3, does not meet 1
5.10 Implement measures to allow for coexistence of different production systems.	Partially meets (1)
5.11 Origin of seeds is controlled	Meets all (2)

Comparative Assessment of the RTRS and SSAP Methods

The U.S. Soybean Sustainability Assurance Protocol is functionally equivalent to the Roundtable on Responsible Soy Standard.

All five RTRS principles are addressed in SSAP.

The SSAP meets or substantially meets 84 of the 98 elements of the RTRS.

Comparative Assessment of the RTRS and SSAP Methods

The 14 elements that were not compliant were predominantly associated with communication process rather than activity on the field.

Element 3.4 “Local population has fair opportunities for employment and provision of goods & services” requires a formal process for notifying local communities of job and training opportunities and makes goods available to local communities. While these activities are common in US ag communities, there are no formal requirements or reporting programs for them.

Sub-Element 3.2.1 “Community rights assessments are carried out” requires a process of assessment of community rights that is not appropriate in US communities.

Elements in SSAP that are not in RTRS

Seven SSAP Directive elements are not met by RTRS, primarily associated with measurements and implementation of wildlife conservation practices.

For example:

SSAP Directive 1.1.1: Producers are in compliance with U.S. laws that prohibit altering the habitat where endangered or threatened species are found in such a way that disrupts essential behavioral patterns including but not limited to: breeding, feeding, sheltering.